

Statement	T or F
A solvent like water can dissolve an unlimited amount of solute.	
Miscible materials are substances that are mutually soluble, like $\text{H}_2\text{O}$ and $\text{CH}_3\text{CH}_2\text{OH}$ .	
Water is a polar molecule and a good solvent for ionic and polar solutes.	
Temperature increases usually decrease the solubility of a solid substance in water.	
Gas solubility in water decreases when the temperature goes up.	
When the pressure of a gas over water is raised, the gas solubility increases.	
An unsaturated solution can dissolve more solute.	
Nonpolar substances do not dissolve well in water.	
Ionic substances dissolve to form electrically conducting solutions.	
There is no such thing as a "supersaturated" solution.	
According to the solubility graph, $\approx 79$ g $\text{NaNO}_3$ will dissolve in 100 mL of water at $10^\circ\text{C}$ .	
100 mL of KCl solution at $50^\circ\text{C}$ has 10 grams. This solution is saturated.	
Hydronium ions are hydrated hydrogen ions.	
For nonelectrolytes, the complete molecule goes into solution.	
The ions in a solution that do not make up the precipitate <i>spectator ions</i> .	
A nonpolar solvent will dissolve a polar solute.	
Dissociation is the separation of ions that occurs when ionic compounds dissolve in water.	
Stirring the solution will help to increase the rate at which a solid will dissolve in a liquid	
Powdering the solid will not help to increase the rate at which a solid will dissolve in a liquid.	
Heating the solvent will help to increase the rate at which a solid will dissolve in a liquid	
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Pressure has very little effect on solid/liquid solutions.	
Gas/liquid solutions respond very easily to changes in pressure.	
Concentrated means a large amount of solute in the solution	
Solubility is the maximum amount of solute that can dissolve in a given amount of solvent under certain conditions.	
Non-polar solute molecules will dissolve in non-polar solvents.	
An aerosol is a colloid of fine solid particles or liquid droplets in a gas such as clouds.	
Foam is a substance that is formed by trapping pockets of gas in a liquid or solid.	
A beam of light or laser light will not trace a visible path through a true solution	
A general rule applied to solute-solvent relationships goes like this: " Like dissolves like"	
Water is the universal solvent.	
The solubility of a gas decreases as the temperature of the solvent increases.	
Temperature has no affect on solubility in liquid/liquid solutions.	
When a solute is dissolved into a solvent, the boiling point of the solvent is raised.	
Bp and fp changes are directly proportional to the molar concentration.	
The addition of a solute to water will lower the freezing point below 0° C.	

## Problems:

1. How many grams of NaCl will dissolve in 300 mL of water at 45 °C?
2. How many grams of CsCl will precipitate out of solution if the solution is cooled from 35°C to 10°C?
3. What is the molality of a solution that has 7 moles of KCl in 2100 g of water?

4. How many grams of NaOH are needed to make a 1.5 m solution with 1600 grams of water?
5. What is the molarity of a solution that has 5 moles of LiCl in 3500 mL of solution?
6. How many grams of KI are needed to make 1200 mL of 1.5 M solution?
7. How many grams of solute are in 1500 grams of a 7.50% solution?
8. What is the boiling point of a 0.45 molal solution of  $\text{H}_3\text{PO}_4$ ?
9. Calculate the molecular weight of butyl alcohol, 18.5 grams of which dissolves in 750 grams of water to produce a solution having a freezing point of  $-0.62\text{ }^\circ\text{C}$